1.0 INTRODUCTION

The City of Moses Lake entered into an Agreed Order (NO. 02-TCPER-4648) with the Washington State Department of Ecology (Ecology) to complete a Remedial Investigation/Feasibility Study (RI/FS) for chemical impacts at the City of Moses Lake Maintenance Facility (Site). The Site is located at 819 E Penn Street, Moses Lake, Washington (Figure 1-1) and bounded by Block Street and Wheeler Road on the west and south, respectively, and an unnamed gravel road bounds the Site to the east (See Figure 1-2). Figure 1-3 provides a schematic of the Site and surrounding area. This report documents the results of the RI and presents FS as required under the Agreed Order.

1.1 Statement of Purpose

The Site is a designated Model Toxics Control Act (MTCA), Washington Administrative Code (WAC) 173-340 (Ecology, 2001a) listed site. The RI/FS has been conducted according to the MTCA cleanup regulations, specifically WAC 173-340 (Ecology, 2001a).

The purpose of the RI/FS is to collect, develop and evaluate sufficient information regarding the City of Moses Lake Maintenance Facility to determine the nature and extent of releases of hazardous substances to support the FS and identify a recommended cleanup action alternative under the MTCA cleanup regulation Chapter 173-340 of the Washington State Administrative Code (WAC) Sections WAC 173-340-360 through WAC 173-340-390. Hazardous substances are defined by Revised Code of Washington (RCW) 70.105D.020 (5).

The RI provides a list of constituents of concern (COCs) for the site, the nature and extent of contamination, a conceptual site model for exposure, and risk-based remedial action objectives that are protective of human health and the environment. Information and data collected during the RI supplements the existing Site information and facilitates completion of the RI/FS.

The FS provides a comprehensive evaluation of likely remediation alternatives and selects one that provides the most practical and achievable results for the City's Maintenance Facility.

1.2 Statement of Objectives

The overall objective of the RI is to clearly establish the nature, and vertical and lateral extent of chemical impacts to Site soil and groundwater, and to develop a conceptual site model for exposure that identifies any potential human health or environmental risks associated with the Site. Completion of the RI will provide the necessary data to support the FS, and evaluate applicable remedial alternatives for the Site to support the recommendation of a remedy that meets all regulatory requirements and will protect human health and the environment.

The objectives of the remedial investigation as identified in the Agreed Order include:

1. An assessment of historical uses and operations at the Site and surrounding area;
2. A comprehensive evaluation of previous investigations and remediation conducted at the Site;
3. A classification of soil types and characteristics at the Site and the discussion of the Site geology and hydrogeology;
4. An evaluation of groundwater use in the area near the Site;
5. An update of the known extent of chemical/petroleum impacted soils at the Site;

6. Installation of appropriately located monitoring wells;
7. Testing of soils and groundwater for petroleum and other potential hazardous substances used/disposed at the Site, if any;
8. Verification sampling around removed/abandoned underground storage tanks (USTs) and previous remediation areas as required by Ecology;
9. A simplified ecological evaluation of the Site and potential impact on adjacent habitat areas; and
10. A survey of the Site and groundwater-monitoring wells installed to determine the groundwater gradient at the Site.

The FS was conducted according to the MTCA cleanup regulations, specifically WAC 173-340-350 through 360 and the Agreed Order.

The objective of the FS is to provide the following:

1. A comprehensive evaluation of likely remediation alternatives; and
2. Presents the recommended remedial alternative that provides the most practical and achievable results for the City of Moses Lake Maintenance Facility.

The remedy recommended in the FS is protective of human health and the environment, effective, achievable in a practical manner and will be able to be implemented within a reasonable time frame.

1.3 RI/FS Approach

Work for the RI/FS was conducted in accordance with Ecology's Agreed Order with the City of Moses Lake, Washington, No. 02-TCPER 4684 and the Remedial Investigation/Feasibility Study Work Plan for the City of Moses Lake Maintenance Facility, Moses Lake, Washington Revision II (Golder, 2003). The RI/FS focuses on the three areas of the maintenance facility, which are included in the following list. A plan of the Site is presented as Figure 1-2.

- The East Portion of the Site, in the vicinity of the maintenance shop, which is the location of previous petroleum hydrocarbon soil and groundwater remediation activities associated with UST closures;
- The Central Portion of the Site where oil impacted soils were encountered during a 2002 geotechnical/environmental investigation (Golder, 2002); and
- The West Portion of the maintenance facility, formerly known as the Mansfield parcel that may have been impacted by potential historic releases of petroleum hydrocarbons or other chemicals.

The RI was conducted to meet the requirements of WAC 173-340-350 and those outlined in Exhibit B of the Agreed Order and include the following elements:

- Site Characterization – provides a characterization of the regional and site-specific geology, hydrogeology and Site soils;

- Source and Contamination Characterization – provides a list of chemicals of concern, identifies the nature and extent of impacted Site soil and groundwater sufficient to support the FS; and,
- Potential Receptors Information – develops a conceptual site model that identifies human and ecological populations that may be in contact with contaminants and potential routes of exposure for those populations; and estimate the current risks to humans and the environment.

The RI it was conducted in a phased approach to achieve the stated purpose and objectives. The overall RI/FS approach was developed to be comprehensive yet streamlined. Prior to conducting the initial phases of the RI, a significant amount of knowledge about the Site existed from previous investigations and the approach accounted for that information. The RI/FS extended the base of Site knowledge by meeting the objectives stated in Section 1.2. The first RI/FS activities involved reviewing background information and existing information associated with previous investigations to identify data gaps. The review was used to develop a list of potential chemicals of concern for the RI. Based on the list, the nature of chemical impacts was characterized prior to delineating its horizontal and vertical extent.

A preliminary evaluation of the potential applicable or relevant and appropriate regulations (ARARs) for the list of potential chemicals of concern was conducted in association with development of the Quality Assurance Project Plan (QAPP) for this RI/FS work plan. The preliminary ARAR evaluation was used to determine the appropriate method of analysis and detection limits for the list of potential chemicals of concern in anticipation of the eventual needs of the FS.

The data generated by the RI scope of work presented in Section 4.0 of the work plan was reviewed to ensure the FS could be completed and a remedy identified that would provide protection of human health and the environment. A supplemental investigation was conducted as data generated during the initial phase of the RI was insufficient to support completion of the FS. The FS evaluates likely remediation alternatives and recommends a selected remedial alternative that is protective of human health and the environment and provides the most practical and achievable results for the Site. The proposed remedy is based on the nature and extent of the affects to the Site soil and groundwater.

1.4 RI/FS Organization

We have structured this RI/FS report to facilitate a clear understanding of all the elements conducted. It is organized as follows:

1.4.1 Remediation Investigation

- Section 1 – Introduction, this section
- Section 2 – Location and Site History
- Section 3 – Physical Setting
- Section 4 – Soil and Groundwater Sampling Method
- Section 5 – Nature and Extent of Chemical Constituents Exceeding Regulatory Criteria
- Section 6 – Potential Applicable Relevant and Appropriate Requirements (ARARs)
- Section 7 – Remedial Action Objectives

1.4.2 Feasibility Study

- Section 8 – Identification and Screening of Remedial Technologies
- Section 9 – Development of Alternatives
- Section 10 – Evaluation of Alternatives
- Section 11 – References